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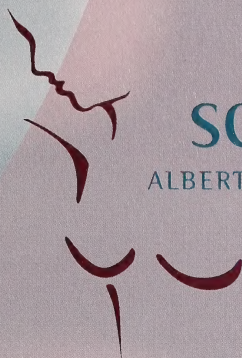
Division of Population Health & Information

# 2003/2005 Biennial Report

March 2006



Alberta Cancer  
Board



## screen<sup>test</sup>

ALBERTA PROGRAM FOR THE EARLY  
DETECTION OF BREAST CANCER





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*Screen Test:*  
Alberta Program for the Early Detection of Breast Cancer

2003/2005 Biennial Report

Division of Population Health and Information  
Alberta Cancer Board

March 2006



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# About the Alberta Cancer Board

## Facilities and Services

The Alberta Cancer Board (ACB) is the provincial health authority that operates cancer facilities and programs in Alberta. Services include cancer prevention, early detection, diagnosis, treatment, research and education. Also included in this role is coordinating, in cooperation with others, the planning and delivery of provincial cancer initiatives.

As part of this mandate, the Alberta Cancer Board operates:

## Cancer treatment and research facilities

Cross Cancer Institute in Edmonton and Tom Baker Cancer Centre in Calgary

## Associate Cancer Centres

Grande Prairie, Lethbridge, Red Deer and Medicine Hat

## Community Cancer Centres (in partnership with Regional Health Authorities)

Canmore, High River, Drayton Valley, Drumheller, Camrose, Lloydminster, Hinton, Barrhead, Bonnyville, Peace River, and Fort McMurray

## Alberta Cancer Foundation

Raises funds and accepts donations on behalf of the ACB, supporting research, prevention, a patient financial assistance program, and enhancement of patient care at ACB cancer centres.

## Division of Population Health and Information

- **Population Health Research:** conducts research into population-based trends in cancer incidence, morbidity and mortality, the causes of cancer, prevention strategies and the early detection of cancer.
- **Alberta Cancer Registry:** a population-based registry of cancer cases in the province.
- **Screen Test: Alberta Program for the Early Detection of Breast Cancer:** a screening mammography and breast health education program with fixed-site offices in Calgary and Edmonton and mobile mammography services throughout the province.
- **Alberta Cervical Cancer Screening Program:** coordinates education strategies and materials, increases efforts to encourage participation of women who have not been regularly screened, and fosters quality at all stages of the screening process.
- **Cancer Prevention Program:** provides a variety of services to health regions, including cancer information, assistance with program and policy development and linkages to resources.
- **Integrated Cancer Care Network (ICCN):** manages a repository of clinical information on patients treated at an ACB facility, and supports care, treatment, and research of cancer patients through electronic health records.
- **Information, Security and Privacy Office (ISPO):** works to ensure the Alberta Cancer Board complies with provincial privacy legislation and maintains industry standards for information security.
- **Information Systems:** improves productivity by minimizing system failures, builds system redundancy, and manages hardware and software infrastructures.



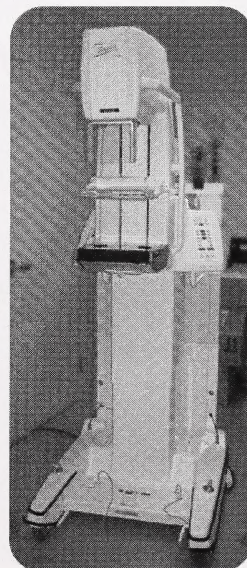
# Executive Summary

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*Screen Test*: Alberta Program for the Early Detection of Breast Cancer has provided breast cancer screening services to Alberta women for over 15 years. Its mission is to reduce mortality from breast cancer in Alberta women, and its activities and goals are guided by Canadian recommendations for organized breast cancer screening programs.

This report presents a description of Program activities and progress in the 2003/05 fiscal years. Below are highlights from this report:

- *Screen Test* provided screening services to all Regional Health Authorities (RHAs) throughout the province at two fixed sites in Calgary and Edmonton and over 100 mobile mammography sites, screening over 45,000 women in the past two years.
- 71% of women screened were in the target age group of 50-69.
- *Screen Test*'s overall abnormality rates were 6.6% for initial screens and 3.5% for re-screens. For women aged 50-69, abnormality rates were 6.2% for initial screens and 3.3% re-screens, meeting and surpassing Canadian and international targets of less than 10% for initial screens and less than 5% for re-screens.
- *Screen Test*'s cancer detection rates were 6.0 per 1,000 for prevalent screens, 5.5 per 1,000 for incident screens, and 5.6 per 1,000 screens overall. With an invasive cancer detection rate of 4.8 per 1,000 re-screens for women aged 50-69, the Program exceeded the Canadian target of greater than 3 per 1,000.
- *Screen Test*'s positive predictive value of 13.6% continues to be among the highest in Canadian screening programs. For women aged 50-69, the positive predictive values were 8% for initial screens and 17% for re-screens, exceeding Canadian targets of at least 5% for initial screens and 6% for re-screens.
- Health promotion and community mobilization activities such as updating *Screen Test*'s visual image, continued collaboration with RHAs to support mobile visits, and various educational displays and community projects helped to increase women's awareness of breast health and encourage participation in breast cancer screening.
- *Screen Test* continued to implement initiatives such as centralized mobile coordination and booking, post-recall cards, and the client satisfaction survey to increase participation and retention, and to optimize Program services.



# Introduction

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We are pleased to introduce the 2003/05 *Screen Test* Biennial Report. The report highlights the activities undertaken by the program and demonstrates the continuing high quality of services we provide.

The first thing readers will likely notice is a change in our visual identity. *Screen Test*'s visual image was updated in 2004 to better reflect women who are currently entering the target age group of 50-69. This included an update in the program logo and colour scheme to appeal to women in the target age group.



*Screen Test* continues to be successful in targeting our services to the age group for which there is the greatest evidence of benefit of mammography screening. While the program accepts women age 40 and over, almost three-quarters of our clients are in the target age group of 50-69. Our program outcome measures reflect high quality screening services, with values for abnormal call rates, re-screen cancer detection rates, and positive predictive values well exceeding Canadian targets. In addition, our clients continue to be highly satisfied with our services.

This two-year period saw a number of operational changes to improve performance. We changed the format in which results are reported, providing more specific information to family physicians about the mammography results while increasing the efficiency of producing reports. After a pilot project that demonstrated increased success in women returning for screening, the program altered its procedures for recalling women in the areas served by our mobile units. Through community mobilization activities, we were able to increase access to mammography screening in populations that typically have lower screening participation rates.

The most significant and exciting development in this two-year period was the announcement of the Alberta Breast Cancer Screening Program (ABCSP) in October 2004 by the Minister of Health and Wellness. While *Screen Test* has been providing screening mammography through a population-based programmatic approach since 1990, the majority of mammography screening in Alberta has occurred outside of the program. The ABCSP, a partnership between the Alberta Cancer Board, the Alberta Society of Radiologists, regional health authorities and other health providers, will coordinate all breast screening activities in the province. This will include broader health promotion and recruitment activities, a coordinated quality assurance approach and a centralized database that will support all program activities. We look forward to working with our partners to make the new program a success.



# Background

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In 2003, 1,794 Alberta women were diagnosed with invasive breast cancer and 420 died of the disease<sup>1</sup>. Breast cancer continues to be the most frequently diagnosed cancer in women (excluding non-melanoma skin cancer), and is the second leading cause of female cancer deaths<sup>2</sup>. Over 290,000 Alberta women aged 50-69 are in the target group for screening mammography<sup>3</sup>, which is currently the most effective tool for the early detection of breast cancer when used within an organized screening program<sup>4</sup>.

The purpose of the 2003/05 *Screen Test* Biennial Report is to provide an update of the *Screen Test* Program's activities and progress for the Alberta Cancer Board (ACB), Alberta Health and Wellness, Regional Health Authorities (RHAs), and health care professionals interested in breast cancer screening. Information is reported biennially because most women attend the Program every two years as recommended by the Canadian screening mammography guidelines<sup>5</sup>.

## 1988

A National Workshop convened and recommended breast cancer screening programs to be set up through provincially coordinated dedicated centres.

## 1999

The Alberta government announced funding for a provincial screening program, mandated to be coordinated by the Alberta Cancer Board with funding from Alberta Health. A Multidisciplinary Advisory Committee was formed to direct implementation and define program goals and objectives.

## 1990

The Alberta Cancer Board's *Screen Test* Program opened its doors simultaneously in Calgary and Edmonton in October 1990.

## 1991

The first mobile mammography van commenced operation in north-central Alberta.

## 1994

The Program became part of the Alberta Cancer Board's newly formed Division of Epidemiology, Prevention and Screening.

## 1996

Two more mobile vans commenced operation in northern and southern Alberta

## 2000

*Screen Test* celebrated 10 years of service to Alberta women, screening over 78,000 women in 163,000 appointments since it began.



*Screen Test* Edmonton management and support staff



## 2003

The Division of Epidemiology, Prevention and Screening changed its name to Population Health and Information to reflect organizational restructuring in which Information Systems, Information Security and Privacy Office, and Integrated Cancer Care Network joined the division.

## 2004

In October 2004, the Minister of Health announced the Alberta Breast Cancer Screening Program (ABCSP), a population-based screening program to be coordinated by the Alberta Cancer Board. The ABCSP will collect information from *Screen Test*, the Alberta Society of Radiologists, and other health providers to operate the provincial program.

# Mission and Activities

*Screen Test*'s mission is to reduce mortality from breast cancer in Alberta women. The Program's activities are directed by the goals and objectives identified by its Advisory Committee.

# Recommendations for Organized Breast Cancer Screening Programs

Recommendations from the 1988 National Workshop Report<sup>5</sup>, *Screen Test*'s 1990 Program startup goals and objectives, the 1993 National Forum on Breast Cancer<sup>6</sup>, the 2002 Guidelines for Monitoring Breast Screening Program Performance<sup>7</sup>, and the 2003 Quality Determinants of Organized Breast Cancer Screening Programs<sup>8</sup> help guide *Screen Test*'s activities and provide benchmarks for evaluation. As new and relevant information becomes available, the Program attempts to adapt program measures to best practices.

Listed below are the recommended components for organized breast cancer screening programs in Canada, with a description of how *Screen Test* incorporates these into its practices.

## A population-based outcome goal

The *Screen Test* Program provides services to all RHAs in the province. Although most screening mammography in Alberta occurs outside of the Program, the ACB is continuing to work towards a province-wide consolidated screening program with the development of the ABCSP.

## Information about the target population

*Screen Test* collects information about the target population of women aged 50-69 for use in planning and evaluation. Sources of target population data include the Alberta Cancer Board's *Screen Test* database, Alberta Cancer Board's Cancer Registry, Alberta Health and Wellness, the Census, and other Statistics Canada data. Additional information has also been collected from population-based surveys on breast cancer screening knowledge, attitudes and behaviours (KABs) for women who access screening outside of the Program.



*Screen Test* Calgary staff



## Special emphasis on hard to reach groups

The Program has remained committed to working towards its goal of screening no less than 70% of any identifiable subgroup (eg. geographic location, ethnic origin) within five years of full implementation. *Screen Test* collaborates with other groups to recruit women from rural areas, diverse ethnic backgrounds, and lower education levels.

## Meticulous quality assurance

All of *Screen Test* mammogram units and program elements meet national accreditation standards. Program radiologists and technologists meet or surpass the relevant education, training, and performance indicators recommended in the Quality Determinants of Organized Breast Cancer Screening Programs<sup>8</sup>. All sites and mammography units within the Program are accredited by the Canadian Association of Radiologists (CAR) and the College of Physicians and Surgeons of Alberta, and equipment cleaning and maintenance procedures adhere to international quality control standards.

## Outcome and data analysis

The *Screen Test* information system provides full access to all data collected for analysis. As a result, analysis on outcome indicators and evaluation of program effectiveness can be presented. Collaboration with other screening programs through the Canadian Breast Cancer Screening Initiative and Database ensures that *Screen Test* uses accurate, current, and relevant program performance measures. This also allows for national and international comparisons of screening programs.

## Information system and linkages

*Screen Test* uses a centralized database and application, which helps to ensure that women are provided with the best possible services throughout the province. *Screen Test* has had continued success using an optical scanning system to scan and verify data directly into the database, with a complementary barcode film tracking system to easily locate films. The *Screen Test* information system enables the Program to optimize program management by capturing relevant data to monitor and evaluate program practices.



*Screen Test Edmonton technical staff*

## A woman-centred focus

*Screen Test* fosters a woman-centred approach that is sensitive to the breast health needs of healthy women. Breast health information and resources are available at clinic appointments, screening sites, and community presentations and displays. *Screen Test* volunteers also help to provide a welcoming and comfortable environment by assisting with clinic appointments.

## Excellent coordination, with high quality diagnosis and follow-up

*Screen Test* actively tracks information to ensure that women requiring diagnostic tests after an abnormal screen receive the required work-up until a final diagnosis is made. Less than 1% of women with abnormal screening results are lost to follow-up.

## Summary

The *Screen Test* Program has the essential components in place for an organized breast cancer screening program. The combination of enhanced early detection and improved treatment will likely ensure that the breast cancer mortality rate will continue to decline in Alberta.

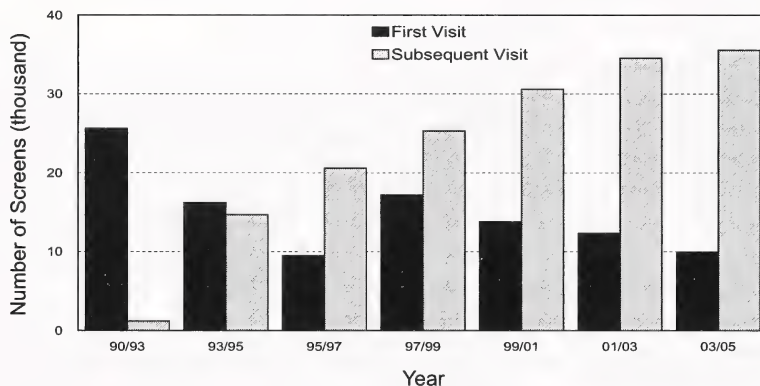
# Program Outcomes

This section summarizes the data gathered by *Screen Test* on the number of visits, client profile, and screening results for the 2003/05 fiscal years.

## Screen Test Visits

*Screen Test* services are provided at Calgary and Edmonton fixed sites, and throughout the province by three mobile mammography units transported by converted vans. *Screen Test* has provided 267,194 screens since October 1, 1990. As Figure 1 shows, the number of visits by first-time *Screen Test* clients increased in 1997/99 with the addition of the second and third mobile units. The number of repeat visits by previous *Screen Test* clients has increased steadily since the Program began as women return to be re-screened.

**Figure 1: Number of Screens**  
2 year intervals, 1990 Oct - 2005 Mar



The number of visits to *Screen Test* stabilized in 2003/05 compared to previous periods as fewer new mobile sites were added in 2003/05. There were 45,528 visits in 2003/05 (Table 1). The differences in the appointment totals shown in Table 1 among the three mobile units are due to differing population densities in the various areas of the province. Also, the mobile units often overlap areas to accommodate fluctuating appointment schedules and sometimes work in the urban areas for special community projects.

Table 1: Screen Test Visits, 2003 April – 2005 March		
Site	Visits	Percent
Calgary	10,263	22.5
Edmonton	9,008	19.8
Mobile 1 (serving north-central Alberta)	9,249	20.3
Mobile 2 (serving more distant regions in northern Alberta)	7,640	16.8
Mobile 3 (serving southern Alberta)	9,368	20.6
<b>Total Visits</b>	<b>45,528</b>	<b>100.0</b>



In addition to the screens shown in Table 1, *Screen Test* continued its partnership with the Saskatchewan Screening Program for Breast Cancer to provide screening in alternating years in the provincial border community of Lloydminster. In 2003, *Screen Test* screened 75 Saskatchewan clients. *Screen Test* also continued its collaboration with the Northwest Territories sites of Hay River and Fort Smith, screening 271 women in 2004. The Northwest Territories and Saskatchewan screening programs oversaw recruitment, appointment scheduling, and diagnostic follow-up for these clients.

As the map in Figure 2 illustrates, *Screen Test* provides services to all RHAs in the province, with over 100 established mobile site locations. Tofield was the newest mobile site location added in 2003/05. *Screen Test* works with each RHA to determine available and appropriate mobile site locations.

**Figure 2: Screen Test Mobile Mammography Site Map**

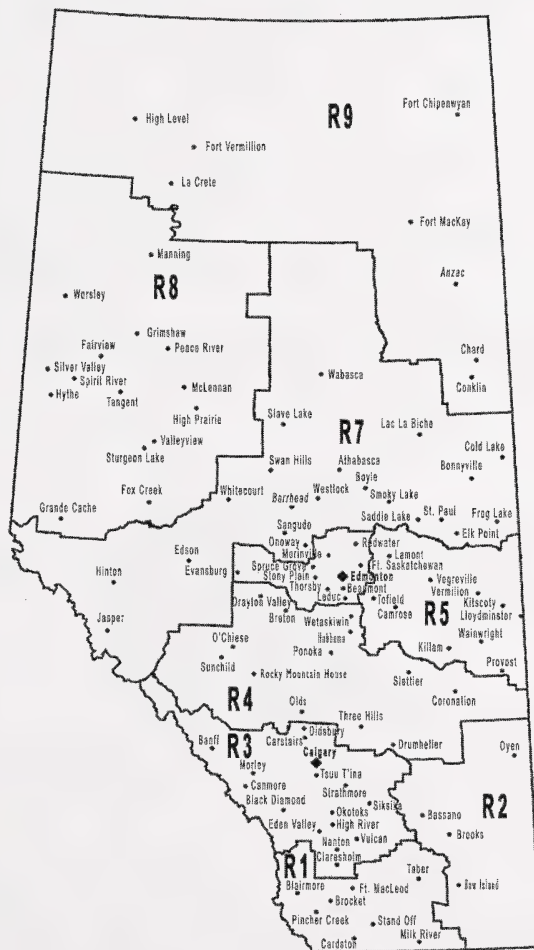


Table 2 shows the number of women screened in 2003/05 by RHA of residence. Because of its success in collaborating with RHAs to select appropriate sites and plan community mobilization, relatively few women need to travel outside of their RHA to obtain screening. Some women do travel to urban centres to obtain screening services if they are in town for other reasons, with approximately 5% of Calgary and 10% of Edmonton fixed site clients being from outside areas.

Table 2: <i>Screen Test</i> Visits by RHA of Residence, 2003 April – 2005 March		
Regional Health Authority	Mobile Site Locations	Totals
1. Chinook	Blairmore, Brocket, Cardston, Fort Macleod, Milk River, Pincher Creek, Standoff, Taber	1,815
2. Palliser	Bassano, Bow Island, Brooks, Oyen	900
3. Calgary	Calgary fixed site, Multiple Mobile Inner City Sites, Banff, Black Diamond, Canmore, Carstairs, Claresholm, Didsbury, Eden Valley, High River, Morley, Nanton, Okotoks, Siksika, Strathmore, Tsuu T'ina, Vulcan	14,000
4. David Thompson	Breton, Coronation, Drumheller, Drayton Valley, Hobbema, O'Chiese, Olds, Ponoka, Rocky Mountain House, Stettler, Three Hills, Wetaskiwin	4,746
5. East Central	Camrose, Daysland, Killam, Kitscoty, Lamont, Lloydminster, Provost, Tofield, Vegreville, Vermilion, Wainwright	2,842
6. Capital	Edmonton fixed site, Multiple Mobile Inner City Sites, Beaumont, Evansburg, Fort Saskatchewan, Leduc, Morinville, Redwater, Stony Plain, Thorsby	11,092
7. Aspen	Athabasca, Barrhead, Bonnyville, Boyle, Cold Lake, Edson, Elk Point, Frog Lake, Hinton, Jasper, Lac La Biche, Onoway, St. Paul, Saddle Lake, Sangudo, Slave Lake, Smoky Lake, Swan Hills, Wabasca, Westlock, Whitecourt	7,345
8. Peace	Fairview, Fox Creek, Grande Cache, Grimshaw, High Prairie, Hythe, Manning, McLennan, Peace River, Silver Valley, Spirit River, Sturgeon Lake, Tangent, Valleyview, Worsley	2,616
9. Northern Lights	Anzac, Chard, Fort Vermilion, Fort Chipewyan, Fort MacKay, High Level, La Crete	172
<b>Total Visits</b>		<b>45,528</b>

## Client Profile

A description of the *Screen Test* client profile helps to monitor the Program's progress in reaching population-based outcome goals and objectives. This section describes the demographic characteristics, breast health practices, and breast cancer risk factors for clients attending *Screen Test* in 2003/05.

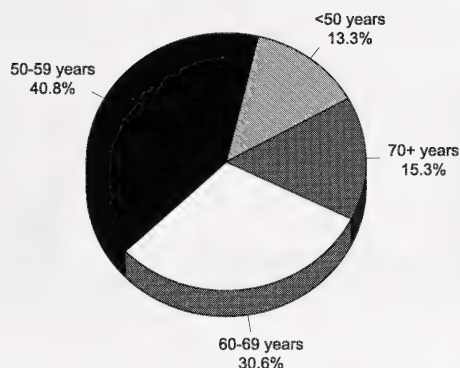
### Age at appointment

Although women aged 40 and over are eligible to be screened by the Program, the target age group is 50-69. As shown in Figure 3, 71% of women attending *Screen Test* in 2003/05 were in the target age group of 50-69. This remained fairly consistent with the previous two-year period. Note that women aged 40-49 are on an annual recall<sup>9</sup> and may have had a mammogram twice within this two-year reporting period. The mean age of women attending *Screen Test* during this two-year period (at the client's initial visit during 2003/05) was 59.5 years.



**Figure 3: Age at Appointment**

**03/04 and 04/05 fiscal years**



### Education and Ancestral Ethnic Background

Collecting information on education levels and ancestral ethnic backgrounds of women attending *Screen Test* helps determine whether the Program is effective in reaching women from different subgroups. Figure 4 shows the highest education level achieved of women attending *Screen Test* in 2003/05. This is similar to the education level distribution of the general Alberta female population<sup>10</sup>. Breast health promotion and educational displays, presentations, and resources are designed to reach women with a variety of education levels.

**Figure 4: Highest Education Level**

**03/05 *Screen Test* Clients**

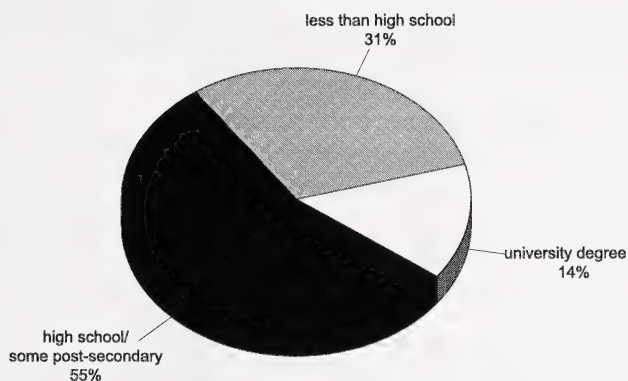
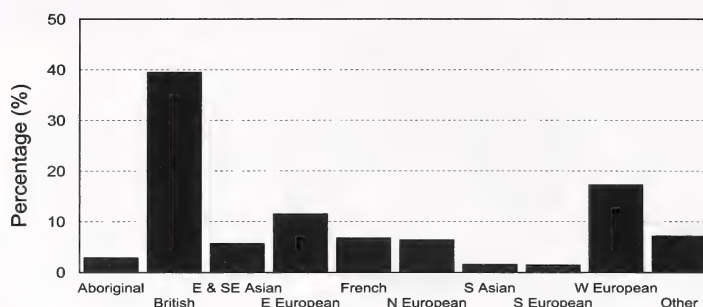


Figure 5 shows the ancestral ethnic backgrounds of women attending *Screen Test* in 2003/05. The large proportion of British and Western European backgrounds is similar to the ethnic background distribution of the general Alberta female population<sup>10</sup>. With an objective to screen no less than 70% of any particular subgroup, *Screen Test* makes use of in-reach projects and appropriate selection of rural mobile sites to encourage screening by women with diverse ethnic backgrounds. In-reach projects working with the East and Southeast Asian (Chinese and Vietnamese), South Asian (Indo-Canadian and Sikh), and Aboriginal communities help to recruit and retain these hard-to-reach groups in the urban centres. Many of the mobile sites in rural areas are located in or adjacent to Aboriginal communities and French speaking communities.

**Figure 5: Ancestral Ethnic Group  
03/05 Screen Test Clients**



### Regular Mammograms

Women in the target age group of 50-69 are recommended to obtain a screening mammogram every two years, while women age 40-49 who choose to participate in mammography screening are recommended to be screened annually. As women may have had mammograms outside of the Program, *Screen Test* collects information on a woman's self-reported last mammogram. Table 3 shows the interval since a woman's last self-reported mammogram for women attending *Screen Test* in 2003/05. Eighty-nine percent of women had at least one mammogram within the past three years. The proportion of women who never had a previous mammogram continues to decline, with slightly more women in the rural areas having never had a previous mammogram than women in the urban areas. With *Screen Test* bringing mammography screening services to women in many parts of the province and focusing on hard-to-reach groups, the Program hopes to reduce the number of women who have never had a mammogram.

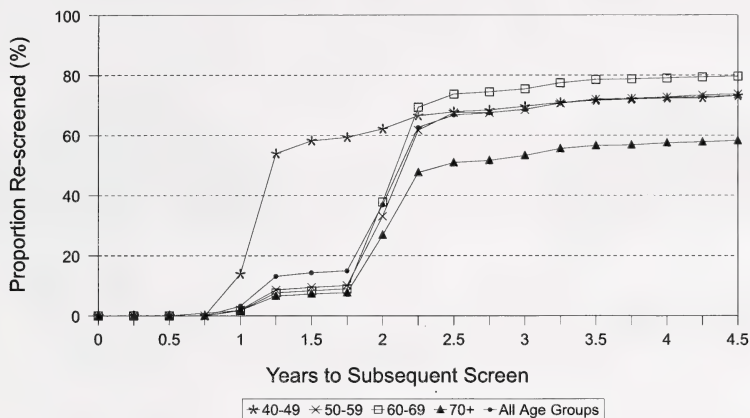
Site	less 3 years ago (%)	more 3 years ago (%)	never had one (%)
Calgary	91.2	3.8	5.0
Edmonton	90.4	3.9	5.7
Mobile 1	87.9	5.7	6.4
Mobile 2	88.0	5.9	6.1
Mobile 3	87.3	6.3	6.3
<b>Total</b>	<b>89.0</b>	<b>5.1</b>	<b>5.9</b>

### Retention

To encourage women to return for a mammogram at the recommended interval, *Screen Test* sends recall cards to women who are due to return for screening. Figure 6 shows the percentage of women screened in 2001/03 who returned for another screen (Note that women aged 75+ are not actively recalled for screening). Overall, 66.8% of women screened in 2001/03 returned to *Screen Test* for a subsequent screen within 2.5 years. For women in the target age group of 50-69, 69.7% returned for a subsequent screen within six months of their due date. It is not known whether women have obtained subsequent screens outside of the Program. *Screen Test* is continuing its work in exploring ways to improve the Program retention rate, including the recent implementation of post (second) recalls for women attending the mobile sites.



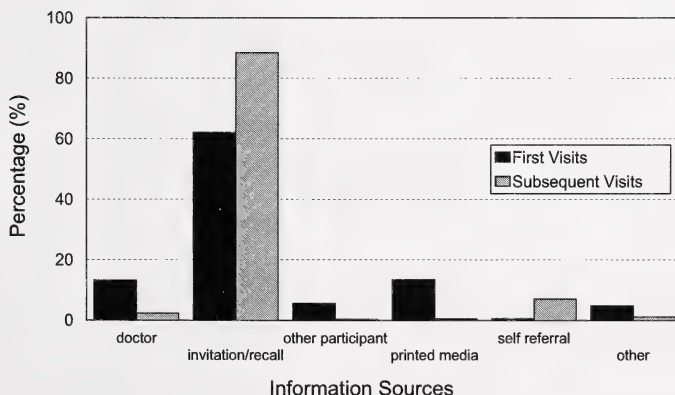
**Figure 6: Cumulative Probability of Returning for Subsequent Screen  
Women Screened in 2001/03 Fiscal Years - by Age Group**



### Information Sources

When a woman calls to book an appointment for her *Screen Test* mammogram, she is asked about her main source of information about the Program. This information helps to evaluate the effectiveness of various recruitment and retention activities. Figure 7 shows first-time *Screen Test* clients report the invitation letter, printed media, and physicians as the most important sources of information about the Program. For subsequent visit *Screen Test* clients, recall cards and self-referral are important. The success of invitation letters and recall cards support research findings that indicate that personal correspondence is an effective strategy for recruitment and retention<sup>11</sup>.

**Figure 7: Information Sources  
2003/05 Fiscal Years**

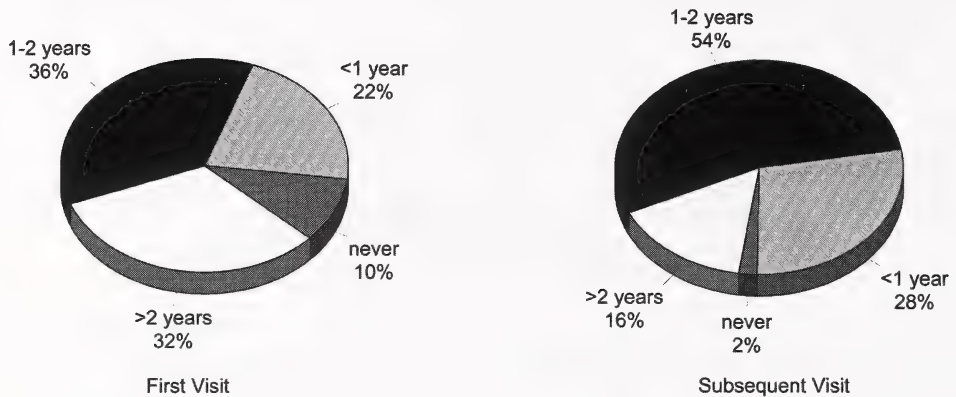


### Clinical Breast Examination

In addition to regular screening mammograms, women aged 50-69 are recommended to obtain annual clinical breast exams (CBE) from a physician or other health practitioner as a part of their breast health practices. Women are also encouraged to be aware of their own breast characteristics and to see their physician if they find any changes. *Screen Test* promotes these breast health practices through messages in Program result letters, videos, pamphlets, displays, and presentations. As shown in Figure 8, 82% of women who had previously attended *Screen Test* had CBE within the past two years, compared to 58% of first visit women. Ten percent of first visit women had never had a CBE, compared to 2% of subsequent visit women.

## Figure 8: Clinical Breast Examination (CBE)

Years Since Last CBE, 03/05 Screen Test Clients



### Risk Factors

Major risk factors for developing breast cancer include age greater than 50 years, birthplace in North America or Europe, and two or more first degree family members with breast cancer. Each of these risk factors has an estimated relative risk of 4.0 or greater<sup>12</sup>.

Other risk factors include having one first degree family member with breast cancer, having high mammographic breast density, and having biopsy-confirmed benign proliferative breast disease (estimated relative risk between 2.1-4.0)<sup>12</sup>. Risk factors with estimated relative risks between 1.1 and 2.0 include age at first birth greater than 30 years, nulliparity, and age at menarche before age 12<sup>12</sup>.

As Table 4 shows, most women attending *Screen Test* are at high risk due to their age and place of birth. Eighteen percent reported menarche before age 12, 17% had high mammographic breast density, and 12% reported a family history of breast cancer of one first degree family member.

Table 4: Breast Cancer Risk Factors, 2003 April – 2005 March		
Major Factors	Response	% of Screen Test Clients
Age greater than 50	Yes	86.7
Birthplace in N. America or Europe	Yes	89.8
Two or more first degree family members with breast cancer	Yes	0.7
Other Risk Factors		
One first degree family member with breast cancer	Yes	11.8
Mammographic density*	$\geq 75\%$	17.4
Two or more breast biopsies	Yes	3.3
Age at first birth greater than 30	Yes	7.2
Nulliparity	Yes	9.1
Menarche before age 12	Yes	18.3

\* As indicated by the radiologist when interpreting the mammogram



# Screening Results

This section describes the screening mammogram results, outcome indicators, and the prognostic features of cancers detected for women attending *Screen Test* in 2003/05. Due to the time lag to obtain diagnostic follow-up information, approximately 2% of women were still in follow-up at the time of writing and were not included in the outcome indicators and prognostic features sections.

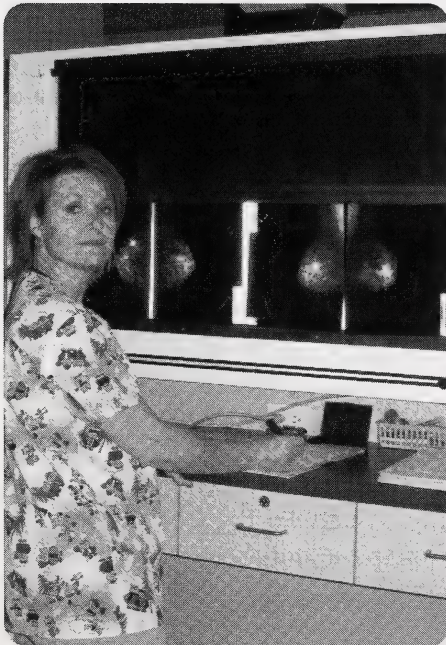
## Result Letters

The Program's goal is to send 95% of result letters to clients and mammogram reports to physicians within two weeks of the client's mammogram appointment date. An important factor that affects time until result letter is sent is the delay in receiving comparison films requested from outside clinics. As seen in Table 5, over 97% of result letters were sent within 14 days of their mammogram appointment.

Table 5: Days Until Result Letter Sent, 2003 April – 2005 March	
Calendar Days	%
0-7 days	52.7
8-14 days	44.5
15-21 days	2.1
21 or more days	0.8

## Mammogram Results and Recommendations

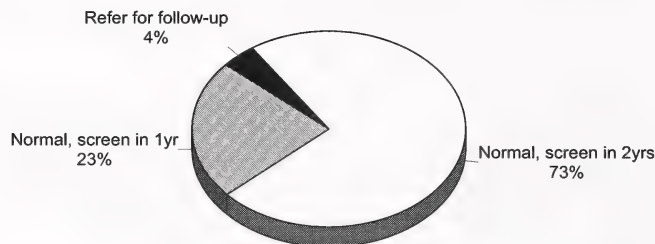
As shown in Figure 9, 96% of mammograms in 2003/05 had no mammographic evidence of breast cancer. Most women (73%) were recommended to return for screening in two years, while 23% were recommended to return in one year. The recommended interval to return for screening depends on age and radiologist recommendation. A one year interval is recommended for women aged 40-49 in accordance with the Clinical Practice Guidelines<sup>9</sup>, and may be recommended for women who present with very dense breasts or benign lesions. Most women aged 50+ are recommended to return for screening every two years.



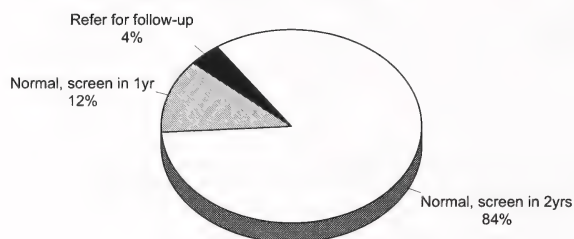
Mammography Technologist

As Figure 9 shows, approximately 4% of mammograms in 2003/05 had abnormal results with recommendations to be referred for follow-up. *Screen Test* works in partnership with women's physicians to ensure that women with abnormal mammogram results are followed up appropriately. To facilitate this, copies of abnormal mammogram result reports are sent to physicians prior to sending result letters to clients. This ensures that physicians are prepared to answer women's questions and arrange for follow-up. If diagnostic follow-up has not been arranged by 2-4 weeks after the result letter was sent, the physician's office is contacted. *Screen Test* then requests and tracks the diagnostic workup results until a final outcome is determined.

**Figure 9: Screening Results**  
2003/05 fiscal years



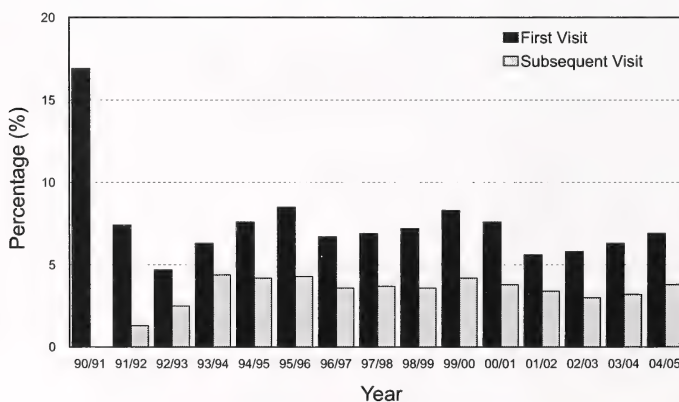
**Figure 10: Screening Results**  
Women Aged 50-69  
2003/05 fiscal years



## Abnormality Rates

As Figure 11 shows, abnormality rates are higher for first visit women than subsequent visit women, reflecting prevalent abnormalities found at the first visit. The standards for abnormality rates on initial screens for the Australian<sup>13</sup>, United Kingdom<sup>14</sup>, and Canadian screening programs<sup>8</sup> are less than 10%, with the European<sup>15</sup> target of less than 7%. For re-screens, the standard for abnormality rates in the United Kingdom is less than 7%<sup>14</sup>, and less than 5% for Australia<sup>13</sup>, Europe<sup>15</sup>, and Canada<sup>8</sup>. *Screen Test* continues to meet these national and international standards with a 2003/05 abnormality rate of 6.6% for first visit women and 3.5% for subsequent visit women. Low abnormality rates indicate that fewer women are subjected to false positive results, however too low an abnormality rate can mean that cancers may be missed.

**Figure 11: Abnormality Rates**  
1 year intervals, October 1990 - March 2005





## Diagnostic Follow-up

After an abnormal screening result, the Program refers women back to their family physician for a physical exam and the coordination of diagnostic follow-up. Table 6 presents the diagnostic procedures undertaken by women following an abnormal screen. In 2003/05, a total of 5,545 diagnostic procedures were performed on 1,836 women. The median number of diagnostic procedures performed following an abnormal screen was 2 (mean=2.3). The most common diagnostic procedures performed were diagnostic mammograms (standard or special views), ultrasounds, and physical exams. The use of core biopsy continues to increase. The average number of days to closure for an abnormal screen, which varies depending on the diagnostic community, was 87 days in 2003/05.

<b>Table 6: Diagnostic Procedures, 2003 April - 2005 March</b>	
	<b>%</b>
Core biopsy	9.7
Fine needle or fluid aspirate	1.5
Needle localization biopsy	0.5
Open biopsy	0.4
Other surgical consultation	3.2
Physical exam	21.8
Standard or special views	34.9
Ultrasound	28.0
<b>Total</b>	<b>100.0</b>

*Note: Excludes cases with follow-up still in progress*

## Outcome Indicators

Outcome indicators help to assess the Program's effectiveness in the early detection of breast cancer. Table 7 shows the outcome indicators of screens done in 2003/05 by age group, excluding those that are still in follow-up (n=38).

<b>Table 7: Outcome Indicators by Age Group, 2003 April - 2005 March</b>					
<b>Outcome Indicator</b>	<b>Age At Exam</b>				<b>Total</b>
	<b>&lt;50</b>	<b>50-59</b>	<b>60-69</b>	<b>70+</b>	
Number of Exams, n (%)	6,063 (13.3%)	18,546 (40.8%)	13,913 (30.6%)	6,968 (15.3%)	45,490 (100%)
Abnormal Call Rate (%)	5.2%	4.3%	3.5%	3.8%	4.1%
Number of Cancers, n	10	66	110	67	253
Cancer detection rate per 1000 prevalent	0.7	3.1	19.3	23.0	6.0
incident	2.0	3.6	7.4	8.8	5.5
total	1.6	3.6	7.9	9.6	5.6
Positive Predictive Value of Screening Mammography (%)	3.2%	8.3%	22.8%	25.3%	13.6%
Biopsy Yield Ratio (%)	0.0%	20.8%	66.7%	83.3%	39.2%
Benign : Malignant Ratio	-	3.80:1	0.50:1	0.20:1	1.55:1

As seen in Table 7, most cancers detected were in the 50+ age groups. The abnormal call rate is lowest in the 60-69 and 70+ age groups, while the positive predictive value is highest in those two age groups. The overall cancer detection rate was 5.6 per 1,000 screens. Among women aged 50-69, the cancer detection rate was 6.3 per 1,000 for prevalent screens and 5.3 per 1,000 for incident screens (not shown in table). These rates remain fairly consistent with the previous biennial reporting period, with slight increases to the incident cancer detection and overall cancer detection rates.

The high positive predictive value of 13.6% indicates that *Screen Test* is very effective at identifying mammographic abnormalities that indicate breast cancer. *Screen Test*'s positive predictive value continues to be among the highest in Canadian screening programs<sup>16</sup>. The low benign to malignant open biopsy ratio of 1.55:1 indicates that *Screen Test* recommendations for further follow-up have not subjected an excessive number of women to unnecessary invasive procedures.

## Prognostic Features

Prognostic features by age group of breast cancers detected by *Screen Test* in 2003/05 are summarized in Table 8. Staging information is reported for cancers with diagnosis dates prior to 2005 only, and excludes 6 cases diagnosed in 2004 that were not staged at the time of writing.

Of the 253 cancers detected, 87% were invasive and 13% were in situ. Of the invasive cancers detected where staging information was available, 35% were 1.0 cm or less and 71% had no invasion of the regional lymph nodes. As well, the majority of cancers detected (64%) were stage I. These measures indicate that the Program is effective at detecting early cancer stages.

Table 8: Prognostic Features by Age Group, 2003 April - 2005 March					
Outcome Indicator	Age at Exam				
	<50	50-59	60-69	70+	Total
Total Number of Cancers	10	66	110	67	253
Histologic Type					
in situ	1 (10.0%)	8 (12.1%)	15 (13.6%)	10 (14.9%)	34 (13.4%)
invasive	9 (90.0%)	58 (87.9%)	95 (86.4%)	57 (85.1%)	219 (86.6%)
Invasive Cancers with Staging Information	5	45	76	45	171
Invasive Tumour Size (cm)					
≤ 1.0	3 (60.0%)	9 (20.0%)	25 (33.3%)	21 (50.0%)	58 (34.7%)
1.1-2.0	2 (40.0%)	23 (51.1%)	36 (48.0%)	14 (33.3%)	75 (44.9%)
2.1 +	0	13 (28.9%)	14 (18.7%)	7 (16.7%)	34 (20.4%)
unknown			(1)	(3)	(4)
median tumour size	1.0	1.5	1.5	1.1	1.4
Axillary Node Involvement					
none removed			4 (5.3%)	4 (8.9%)	8 (4.7%)
negative	4 (80.0%)	29 (64.4%)	54 (71.1%)	34 (75.6%)	121 (70.8%)
positive	1 (20.0%)	16 (35.6%)	18 (23.7%)	7 (15.6%)	42 (24.6%)
TNM Stage Grouping					
I	4 (80.0%)	21 (46.7%)	50 (66.7%)	31 (73.8%)	106 (63.5%)
II	1 (20.0%)	22 (48.9%)	19 (25.3%)	9 (21.4%)	51 (30.5%)
III		1 (2.2%)	6 (8.0%)	1 (2.4%)	8 (4.8%)
IV		1 (2.2%)		1 (2.4%)	2 (1.2%)
X			(1)	(3)	(4)



## Comparison to Canadian Standards

Table 9 shows the *Screen Test* outcome indicators and prognostic features as compared to the Canadian standards published by the National Evaluation Indicators Working Group in 2002<sup>7</sup>. Canadian standards are defined for women between the ages of 50-69.

*Screen Test* meets the majority of Canadian standards for outcome indicators and prognostic features for women aged 50-69. *Screen Test*'s positive predictive values of 8% for initial screens and 17% for re-screens well exceed the Canadian targets. The Program's benign to malignant open biopsy ratio of 1.60:1 exceeds the target of less than or equal to 2:1. In addition, 28% of invasive cancers detected by *Screen Test* were 10mm or less and 29% had positive lymph nodes. These meet the national targets of more than 25% of tumour sizes being 10mm or less and less than 30% of lymph nodes assessed being positive. With a rate of 4.8 per 1,000 re-screens, *Screen Test* also exceeds the invasive cancer detection rate target for re-screens, as well as meeting the 24-month post-screen detected invasive cancer rate target with a rate of 8.6 per 10,000 person-years.

<b>Table 9: <i>Screen Test</i> 2003/05 Outcome Indicators and Prognostic Features Compared to Canadian Breast Screening Standards for Women 50-69 years old</b>		
<b>Indicator*</b>	<b>National Recommendation</b>	<b><i>Screen Test</i>†</b>
Abnormal call rate	< 10% initial screens < 5% re-screens	6.2% 3.3%
Invasive cancer detection rate	> 5 per 1,000 on initial screen > 3 per 1,000 on re-screens	4.4 per 1,000 4.8 per 1,000
In situ cancer detection rate	Surveillance and monitoring only	0.7 per 1,000
Positive Predictive Value	≥ 5% initial screen ≥ 6% re-screen	7.9% 16.9%
Benign to malignant open biopsy ratio	≤ 2:1	1.60:1
Invasive cancer tumour size	> 25% ≤ 10mm	28.3%
Positive lymph nodes in cases of invasive cancer	< 30% node positive	29.1%
Post-screen detected invasive cancer rate‡	< 6 per 10,000 person-years (within 12 months)	6.6
	< 12 per 10,000 person-years (within 24 months)	8.6

† *Screen Test* values exclude cases with follow-up in progress (for abnormal call rate, invasive cancer detection rate, in situ cancer detection rate, positive predictive value, and benign to malignant open biopsy ratio) and cases not staged at the time of writing (for invasive cancer tumour size and positive lymph node status).

\* Measures for participation rate, retention rate, and diagnostic interval are discussed in previous sections of this report.

‡ Data for 2001/03 screens were used

## Summary

Screening results and outcome indicators help to assess the Program's effectiveness in the early detection of breast cancer. *Screen Test* meets or exceeds the majority of national and international standards for breast cancer screening programs, demonstrating the Program's excellent progress towards achieving its goals.

# Public Awareness and Participation

*Screen Test's* health promotion and community mobilization activities focus on increasing women's awareness of breast health and encouraging women to participate in mammography screening. Highlights of some of the activities are summarized below.

## Visual Image

*Screen Test's* visual image was updated in 2004 to better reflect women who are currently entering the target age group of 50-69. This included an update of the *Screen Test* logo and colour scheme to appeal to women in the target age group. Print resources and the web site were updated at the same time.

The Program has also revised the physician prescription pad for *Screen Test* and developed five new brochures:

- *Screen Test: Alberta Program for the Early Detection of Breast Cancer*
- All About Screening Mammograms
- Your *Screen Test* Appointment
- What is Cancer?
- What does it mean if I have an abnormal result on my mammogram?



## Volunteers

Volunteers continue to play an important role in bringing *Screen Test* services to Alberta communities. Over 11,000 hours were generously donated by volunteers in 2003/05 in Edmonton, Calgary, and rural Alberta mobile sites. All volunteers receive training regarding their responsibilities under the Health Information Act to ensure that clients' privacy is protected.



# Community Mobilization for Mobile Services

In collaboration with RHAs, *Screen Test* funds Community Mobile Assistants (CMAs) for mobile services to work with their communities to encourage breast cancer screening and support the mobile visit. A new Community Mobile Assistant Manual was created to assist CMAs in preparing rural communities for mobile screening visits.

*Screen Test* continues to evaluate criteria for mobile sites. In 2005, *Screen Test* discontinued mobile services to Carstairs with clients from this community being invited to Didsbury. *Screen Test* will be adding the communities of Driftpile, Fox Lake and Chateh to its mobile schedule.

## Health Promotion, Education, and In-Reach/Out-Reach

*Screen Test* provided displays and presentations at sites such as seniors' centres, flu clinics, work sites, health conferences, and community fairs to increase women's awareness of breast cancer screening and general breast health.

Urban in-reach mobile screening clinics were held for the Aboriginal, Chinese, and Indo-Canadian communities in Edmonton; and the Chinese, Indo-Canadian, and Vietnamese communities in Calgary.

*Screen Test* has been working with the Assist Community Services Centre in Edmonton who, through a grant from the Canadian Breast Cancer Foundation, has initiated a project to reach women in the Chinese, Indo-Canadian and Arabic communities to increase awareness about breast health and mammography. The project expanded in 2005 to include the Korean community.

*Screen Test* is also working with the Edmonton YMCA who, again through a grant from the Canadian Breast Cancer Foundation, has initiated a project to reach women in the Edmonton inner city to increase awareness about breast health and mammography. This project focuses on Aboriginal and marginalized groups.



# Program Updates

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Below is a summary of some of the new projects *Screen Test* has undertaken in the 2003/05 period.

## Mammogram Result Report Images Sent to Physicians

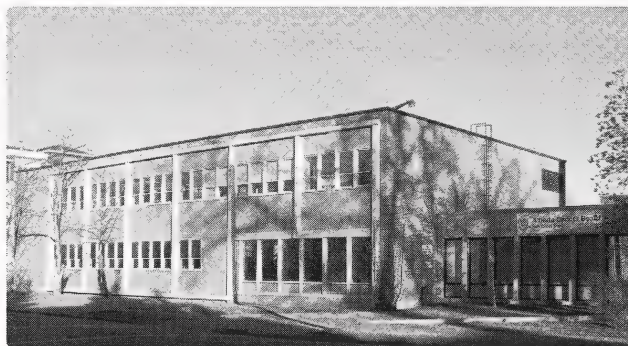
Instead of generating and sending result letters to notify physicians of their patients' mammogram results, in November 2003, *Screen Test* started sending copies of the mammogram result report to physicians. The mammogram result report is filled out by a radiologist, who indicates the results of the mammogram as well as any comments. The reports are scanned and verified using the optical scanning system which saves data directly into the *Screen Test* database and saves a copy of the scanned image. The scanned images are then printed and sent to physicians. This provides an automated way to notify physicians of mammogram results, as well as the added benefit of allowing physicians to see radiologist's recommendations and comments directly.

## Centralized Mobile Coordination and Booking

In 2003, *Screen Test* re-organized its operations to have the Edmonton fixed site office provide centralized mobile coordination, scheduling, and mobile appointment booking for the entire province. This followed the implementation of centralized data processing and correspondence generation out of the Calgary fixed site office. These improvements help to increase the efficiency of Program operations.

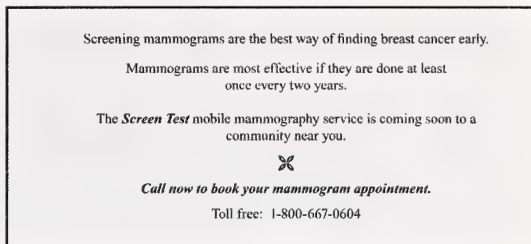
## New Calgary Location

In April 2004, the Calgary fixed site office was relocated to the new ACB Holy Cross site, which also houses the Division of Population Health and Information's Cancer Prevention program and the Tom Baker Cancer Centre's Psychosocial Services department. The new site offers more space for *Screen Test* services and staff, along with a central location and free client parking.



## Post-Recall Cards

Following recommendations from the 2001/02 retention follow-up study to pilot and evaluate possible retention strategies, the post-recall card pilot project was conducted in 2003. The pilot involved several mobile sites for which post (second) recall cards were sent to women who were due for their mammogram at the last mobile visit to the site but did not return for screening. Pilot project results showed an increase in the number of these women returning for another mammogram when compared to similar sites where the post-recall card was not sent. The positive results from the pilot led to the implementation of the post-recall cards for all mobile sites throughout the province starting July 2004.

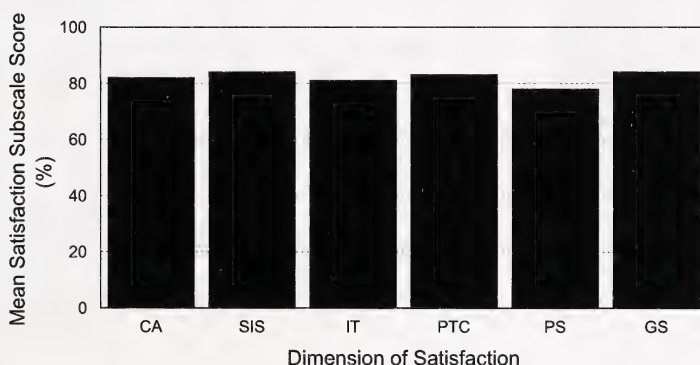


Post-recall Card

## Client Satisfaction Survey and Focus Groups (2004/05)

*Screen Test* conducted a second round of focus groups and a survey in 2004/05 to assess clients' satisfaction with the Program. The six dimensions of satisfaction measured were convenience and accessibility (CA), interpersonal skills of staff (SIS), information transfer between staff and client (IT), perceived technical competence of staff (PTC), physical surroundings (PS), and general satisfaction (GS). The mean satisfaction subscale scores, with 100 being the highest possible satisfaction and 0 being the lowest, are shown in Figure 12. Results from the survey and focus groups demonstrated a high level of satisfaction in all six areas, with little difference when compared to the previous survey and focus groups conducted in 2002/03.

**Figure 12: Client Satisfaction Survey  
2004/05 *Screen Test* Clients**



## Collaborative Stage by Cancer Registry

As the Program moves towards using Cancer Registry staged cancer information, *Screen Test* stopped staging breast cancers diagnosed in January 2005 onward. The Alberta Cancer Registry has staged breast cancers diagnosed from 2001 onwards, and will continue to stage using the collaborative staging system for cancers diagnosed from January 2004 onward.

## Recruitment for Research Projects

In 2003/05, *Screen Test* continued to participate in the recruitment of women for the Study of Tamoxifen and Raloxifene (STAR) and the Alberta Lifestyle and Physical Activity (ALPHA) trials, inviting eligible *Screen Test* clients to participate in these research projects.



# Summary and Future Directions

This report highlights *Screen Test*'s outcomes and activities in the 2003 to 2005 fiscal years. With all of the components of an organized breast cancer screening program in place, *Screen Test* continues to provide high quality mammography screening services for Alberta women. In addition, the Program meets or exceeds most national and international targets for monitoring and evaluation of breast screening programs.

Future plans for the Program include direct referral for diagnostic work-up, use of an auto-dialer to automate appointment reminder telephone calls, and an upgrade of the internal *Screen Test* software program. In its effort to reduce mortality from breast cancer, *Screen Test* will also be collaborating with other stakeholders to provide screening services as a part of the Alberta Provincial Breast Cancer Screening Program.



Mobile Mammography Unit

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# Appendix A: Glossary of Terms

## Abnormality Rate

Also referred to as the Abnormal Call Rate, the Abnormality Rate is the proportion of screening mammogram examinations determined to require further diagnostic assessment (e.g., called “abnormal” or “needing further review”).

$$\text{Abnormal Call Rate} = \frac{\text{number of exams called abnormal}}{\text{total number of exams performed}}$$

## Biopsy Yield Ratio

Proportion of cases biopsied that resulted in a diagnosis of breast cancer. Excludes core biopsy.

$$\text{Biopsy Yield Ratio} = \frac{\text{Mb}}{\text{Bb} + \text{Mb}}$$

Bb – number of cases with benign diagnosis on screen-initiated biopsy

Mb – number of women found to have breast cancer on screen-initiated biopsy

Biopsy Yield Ratio, which is sometimes referred to as Positive Predictive Value of Biopsy, can also be expressed as Benign: Malignant Ratio.

$$\text{Benign : Malignant Ratio} = \frac{\text{Bb}}{\text{Mb}} : 1$$

## Cancer Detection Rate

Proportion of screened cases found to have breast cancer upon further investigation of an “abnormal” screening result, per 1,000 screens.

*Prevalent Cancer Detection Rate* is the cancer detection rate on the first screening examination or self-reported last mammogram  $\geq 3$  years ago.

*Incident Cancer Detection Rate* is the cancer detection rate on the return screening examination or self-reported last mammogram  $< 3$  years ago.

## Cancers

Refers to screen-detected breast cancers.

## Exams

Unless otherwise stated, refers to a valid mammogram appointment with *Screen Test* during the 2003/05 fiscal years.

## Incident Mammogram

Refers to the last self-reported mammogram being  $< 3$  years ago. This does not necessarily refer to a previous *Screen Test* mammogram.

## In Situ Cancer Detection Rate

Number of women detected with in situ cancer (non-invasive cancer) during a screening episode per 1,000 women screened.



**Invasive Cancer Detection Rate**

Number of women detected with invasive cancer during a screening episode per 1,000 women screened.

**Invasive Cancer Tumour Size**

Size in greatest diameter of invasive tumours as determined by the best available evidence: (1) pathological, (2) radiological, and (3) clinical.

**Participation Rate**

Percentage of women who have a Program screening mammogram (calculated biennially) as a proportion of the age and area eligible population.

**Positive Nodes in Cases of Invasive Cancer Rate**

Proportion of invasive cancers in which the cancer has invaded the lymph nodes. Excludes cases where lymph nodes are not assessed.

**Positive Predictive Value (PPV)**

Proportion of abnormal cases found to have a breast cancer after diagnostic work-up.

$$\text{PPV Rate} = \frac{\text{number of screen detected cancers}}{\text{number of abnormalities}}$$

**Post-Screen Detected Invasive Cancer Rate**

Number of women with a diagnosis of invasive breast cancer after a negative screening episode per 10,000 person-years at risk, within 12 and 24 months of the screen date.

**Prevalent Mammogram**

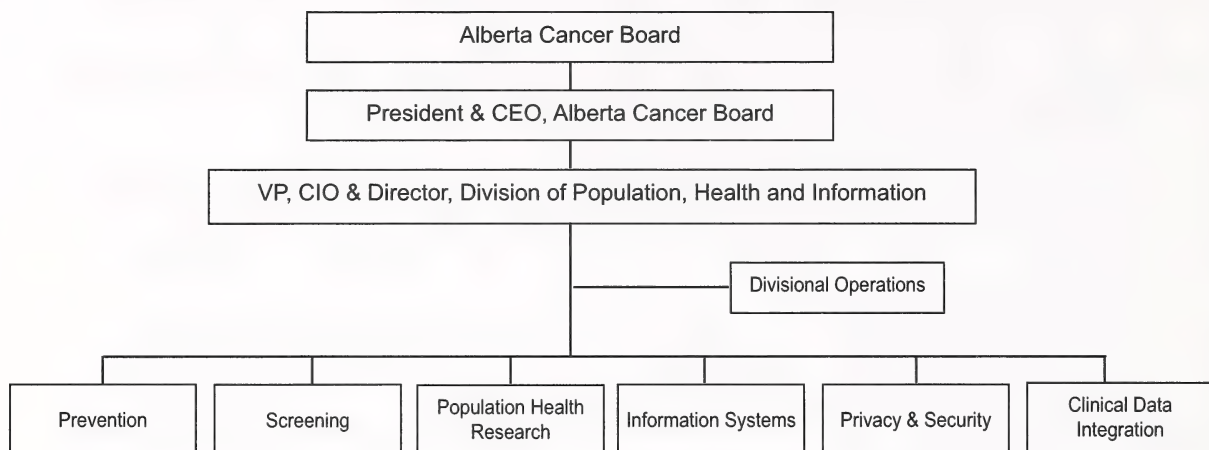
Refers to the last self-reported mammogram being  $\geq 3$  years ago or having never had one. This is not necessarily referring to an initial mammogram with *Screen Test*.

**Retention Rate**

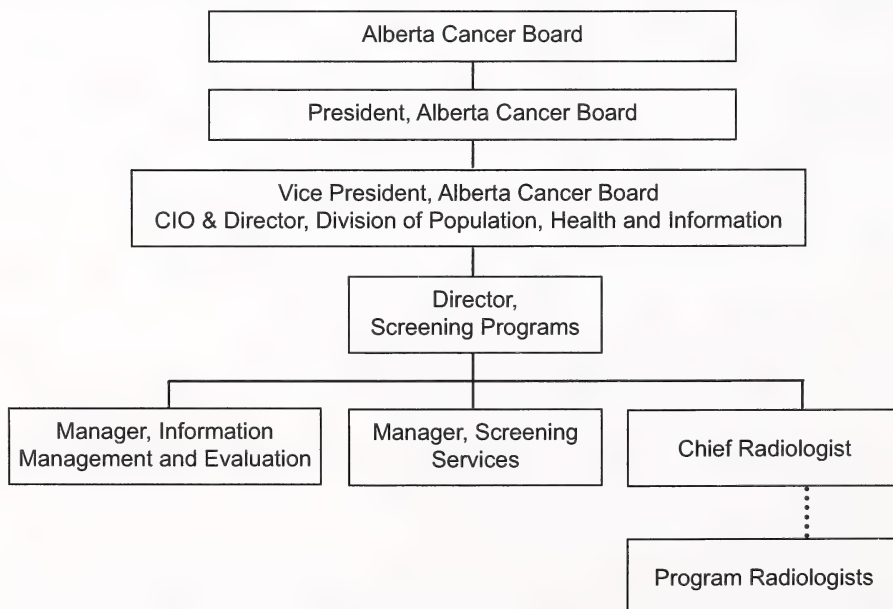
The estimated percentage of women who are re-screened within 30 months of their previous screen.

# Appendix B: Organizational Charts

## Division of Population Health and Information



## Screen Test: Alberta Program for the Early Detection of Breast Cancer



# Appendix C: Relevant Legislation

The Alberta Cancer Board's *Screen Test* Program may collect, use, and disclose information on clients and health service providers as authorized by legislation and ACB policies. The Program has the duty to protect this information. Program staff and volunteers are trained to adhere to all relevant legislation, which includes:

- Alberta Cancer Board Policies and Procedures
- Cancer Programs Act
- Health Information Act
- Freedom of Information and Protection of Privacy Act
- Protection of Persons in Care Act



# Appendix D: *Screen Test* Resources

The following resources are available free of charge from *Screen Test*:

## Brochures

### **Screen Test: Alberta Program for the Early Detection of Breast Cancer**

This brochure describes the *Screen Test* Program, its eligibility requirements, and provides self-referral information.

### **What is Cancer?**

This brochure provides women with a summary of cancer, breast cancer, breast cancer risk factors, symptoms, and a breast screening life plan.

### **All About Screening Mammograms**

This brochure describes screening mammograms, mammogram benefits and risks, and answers common questions about mammograms.

### **Your Screen Test Appointment**

This brochure explains the appointment procedure at *Screen Test*, including how to prepare for the appointment, what the mammogram will entail, and when results will be sent out.

### **What does it mean if I have an abnormal result on my mammogram?**

This brochure is sent to women with abnormal mammogram results and provides information about what the abnormal result means.

## Other Resources

### **A screening mammogram – do it for you!**

This 8.5" x 14" poster reminds women aged 50-69 to have screening mammograms every two years and provides *Screen Test* contact information.

### **Physician Referral Pads**

These screening mammography referral pads are available to physicians to refer their patients to *Screen Test* for a screening mammogram. Included is *Screen Test* contact information and instructions on how to prepare for the appointment.

### **All About Screening Mammography Tear Off Sheets**

These pads of 100 tear off sheets contain information describing mammograms, why regular screening mammograms are important, and answers common questions about mammograms.

### **Screen Test Information Business Cards**

These business cards have *Screen Test*'s logo, contact information, and eligibility requirements for the Program.

# ***WE WANT YOUR FEEDBACK!!***

**Screen Test** publishes the Biennial Report to inform the Alberta Cancer Board, Alberta Health, Regional Health Authorities, and health care professionals interested in breast cancer about Program activities and the Program's progress in meeting its targets. To ensure that we provide information that is useful and understandable, we would like your feedback.

You can give us your feedback (1) through electronic mail: [jansteve@cancerboard.ab.ca](mailto:jansteve@cancerboard.ab.ca), (2) through land mail, or (3) by fax at (403) 355-3288.

We would like to know your opinion of the **Screen Test** 2003/05 Biennial Report regarding...

## **Type of Information:**

Excellent ☐                      Good ☐                      Fair ☐                      Poor ☐

## **Readability:**

Excellent ☐                      Good ☐                      Fair ☐                      Poor ☐

## **Presentation of Information:**

Excellent ☐                      Good ☐                      Fair ☐                      Poor ☐

What do you think is the most important information in the Biennial Report?

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How would you improve the Biennial Report?

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Thank you for completing this evaluation. Please return the form to:

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*Screen Test*

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For long distance mobile mamography services call 1-800-667-0604  
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